

## REMARKS

Reconsideration of the present application is respectfully requested. Claims 1, 3-7, 13-15, 17-18 and 23-31 were pending. In this amendment, claims 1, 4, 14, 17, 24-26, 28 and 31 have been amended. Claim 27 has been canceled. Claims 32-34 have been added. Therefore, claims 1, 3-7, 13-15, 17-18, 23-26, and 28-34 are presented for examination.

### Rejections under 35 USC § 103

Claims 1, 3-7, 13, 14, 15, 17, 18, 23, 24-26, and 27-31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combined teachings of U.S. Patent No. 6,650,619 to *Schuster* et al. (“*Schuster*”) in view of U.S. Patent No. 6,446,108 to *Rosenberg* et al. (“*Rosenberg*”).

Independent claims 1, 14 and 24-26, as amended, each include at least one limitation not disclosed nor suggested by *Schuster* or *Rosenberg*, individually or in combination. Specifically, independent claim 1 now includes the limitation: “using a flow control algorithm in the intermediary node to compute a back-off time period, wherein...the flow control algorithm is a function of at least one of: a received back-off message received from the upstream node or failure of the upstream node to respond to another message previously forwarded by the intermediary node to the upstream node.” Independent claims 14 and 24-26 each include a similar limitation. Applicants submit that neither *Schuster* nor *Rosenberg*, individually or in combination, disclose or suggest this limitation.

As Examiner correctly stated, “*Schuster* does not specifically teach the use of specific-type messages, namely a message flow control algorithm.” (Office Action, p. 4, mailed June 8, 2005). Therefore, *Schuster* cannot disclose that “the flow control algorithm is a function of at

least one of: a back-off message received from the upstream node or a failure of the upstream node to respond to a message previously forwarded by the intermediary node to the upstream node.”

*Rosenberg* also does not disclose or suggest the limitation missing in *Schuster*. Examiner stated that *Rosenberg* discloses use of a message flow control algorithm in col. 3, lines 34-67 and col. 4 lines 1-45. (Office Action, p. 4, mailed June 8, 2005). However, the algorithm disclosed *Rosenberg* is not a function of either a back-off message or a failure of the upstream node to respond to a message previously forwarded.

Rather, the factors upon which the *Rosenberg* algorithm is based are described as follows:

“...the frequency of the advertisements from a server is set to scale back based on a simple technique.

Any server which advertises to a multicast group G also joins and listens to the group. It counts the number of distinct other servers which send advertisements to the group. Let's say N other servers are heard from. The period of advertisements from the server is then set to N times some basic period Tb. This limits the total amount of bandwidth on a multicast group to roughly one packet every Tb seconds. This is independent of the number of servers advertising. The bandwidth usage thus scales well, at the expense of less frequent advertisements.

Some additional aspects of this basic "back-off" algorithm can also be used:

1. The period is always made greater than some minimum.
2. The minimum period increases with the age of the advertisement. The age is defined as the number of times the exact same advertisement has already been sent. When any parameter of the advertisement changes, the age is reset to zero. This allows older advertisements to be sent less frequently.
3. A random factor is added so that the actual period varies randomly between 1/2 and 3/2 of whatever the deterministic period, computed above, turns out to be. The random factor helps avoid some synchronization pathologies that can occur.

Let's say a Server hears N other servers. We define a parameter CONFIG\_INTERVAL\_12, which is the average worst-case interval of 1 kbyte packets to be transmitted, summed across all servers, into the multicast group. Each Server wishing to send an advertisement of size K will periodically send the advertisement with a period T equal to:

$$T=R(1/2)\max(\text{CONFIG\_INTERVAL\_13}*F(\text{age}),N*\text{CONFIG\_INTERVAL\_12}*K/1024),$$

where

F(age) is a function which starts at some fractional power of two,  $2^{(-\text{CONFIG\_INTERVAL\_14})}$ , whenever an advertisement is different from the previous. For each subsequent advertisement which is not different from the previous, F(age) doubles, until it hits 1, and then it stays fixed at 1. We also define  $R(1/2)$  as a random variable uniformly distributed between  $1/2$  and  $3/2$ . For example, say that  $\text{CONFIG\_INTERVAL\_12}$  is 64 ms. This means that the total rate of packets sent into the group will be 128 kbps when group sizes are large. If there are 1000 servers, each sending 1 kByte packets, each one will get to advertise once a minute. When group sizes are smaller, the packet rate remains at  $1/\text{CONFIG\_INTERVAL\_13}$  (perhaps 32 kbps) during steady state. However, when an advertisement changes, the rate can temporarily increase (but not above 128 kbps) to hasten the broadcast of this announcement.

As clearly can be seen from excerpts above in the sections cited by the Examiner, the algorithm disclosed in *Rosenberg* is a function of:

1. N, the number of distinct other servers which send advertisements to the group;
2.  $T_b$ , some basic period which is greater than some minimum time period;
3.  $\text{CONFIG\_INTERVAL\_12}$ , an average worst-case interval of 1 kbyte packets to

be transmitted into the multicast group,

4. age, the number of times the exact same advertisement has already been sent; and
5. R, a random variable.

*Rosenberg* does not disclose or suggest that the *Rosenberg* algorithm is a function of a back-off message received from any nodes. *Rosenberg* also does not disclose or suggest that the *Rosenberg* algorithm is a function of a failure of the upstream node to respond to a message.

Therefore, *Rosenberg* does not disclose or suggest that the limitation recited in claim 1 of: “using a flow control algorithm in the intermediary node to compute a back-off time period, wherein...the flow control algorithm is a function of at least one of: a received back-off message

received from the upstream node or failure of the upstream node to respond to another message previously forwarded by the intermediary node to the upstream node.”

Therefore, neither *Schuster* nor *Rosenberg*, individually or in combination, disclose, suggest, or render obvious the claimed limitations of independent claim 1.

Independent claims 14 and 24-26 each include a similar limitation. Therefore, neither *Schuster* nor *Rosenberg*, individually or in combination, disclose, suggest, or render obvious claims 14 or 24-26 for at least the foregoing reasons.

Dependent claims 3-7, 13, 17-18, 23 and 28-31 depend, directly or indirectly, from one of the foregoing independent claims. Therefore, neither *Schuster* nor *Rosenberg*, individually or in combination, disclose, suggest, or render obvious claims 3-7, 13, 17-18, 23 and 28-31 for at least the foregoing reasons as well.

Accordingly, Applicants respectfully submit that claims 1, 3-7, 13-15, 17-18, 23-26, and 28-31 are in condition for allowance and respectfully request withdrawal of the rejections under 35 U.S.C. § 103.

#### New Claims

Claims 32-34 have been added. Claims 32-34 are directed towards matter originally disclosed in the specification. Therefore, Applicants submit that no new matter has been added.

Additionally, claims 32-34 depend, directly or indirectly, from independent claim 1. Therefore, Applicants also respectfully submit that neither *Schuster* nor *Rosenberg*, individually or in combination, disclose, suggest, or render obvious new claims 32-34 for at least the foregoing reasons. Accordingly, Applicants respectfully submit that claims 32-34 are also in condition for allowance.

CONCLUSION

Applicants respectfully submit the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Jordan Becker at (408) 720-8300.


Pursuant to 37 C.F.R. 1.136(a)(3), Applicants hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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